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III.—*The Origin of the Latin Letters G and Z.*

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THE usual account of the letters involved in this paper may be summarized as follows:—

(1) Greek Z was at first employed to represent the early Latin voiced fricative *z*, but later went out of use, being supplanted by S, which continued to be employed for *z* (as well as for *s*) until the *z*-sound became an *r*, when R took the place of S and thus represented both original *r* and the *r* that arose out of *z < s* (so practically Lindsay, *The Latin Language*, p. 5–6, but he skips the S-stage in his *Short Historical Latin Grammar*, see below, p. 28).

(2) Greek *gamma*, in the Western form ζ , was at first used for *g*, while κ was used for *k*; but in the course of time ζ , or its later rounded form C, almost entirely displaced κ , and was thus used for both *g* and *k*, until Spurius Carvilius Ruga, who established a school in Rome about 231 B.C. [or Appius Claudius the censor, as urged by Jordan, cf. p. 26 below], invented the letter G as a distinctive sign for *g* (by adding a diacritic mark to the older C) and put the new letter in the place of the discarded Z. Somewhat later—in the time of Augustus—Z was re-introduced in the transliteration of Greek words (Stolz, *Historische Grammatik der lateinischen Sprache*, I. p. 83, § 71; 86, § 74).

I.

The theory as to an old Z in Latin is due chiefly to a remark of Martianus Capella (circa A.D. 425) to the effect that the censor Appius Claudius Caecus (312 B.C.) disliked the letter because, when pronounced, it resembled the teeth of a dead man: *z vero idcirco Appius Claudius detestatur quod dentes mortui dum exprimitur imitatur*, III. 261. It is

impossible to take the statement as it stands. In the first place, it was *s* and *S*, not *Z*, that *R* displaced in the days of Appius Claudius. In the second place, when the sound had become *r*, Claudius's dislike of the supposed looks of one's mouth while producing the sound *z* could have nothing to do with the banishment of the *letter*, whether that was *s* or *Z*. The story, as it appears in Martianus Capella, is a very stupid one. Its basis is evidently an older story of Claudius's conceit that the *letter* resembled the jagged teeth of a skull; and in all probability it was first said of the *s* still in use in the time of Claudius, but which the medieval Martianus, who knew only the round *S*, took to be a *Z*. This fits perfectly with the statement in the Digest (1. 2. 2. 36) that Appius Claudius "invented" the letter *R* in place of older *s* or *S* where the sound had undergone the changes *s>z>r*:*R* *litteram invenit ut pro Valesiis Valerii essent, et pro Fusiis Furii*. Of course, Appius Claudius did not invent *R*, which had always existed in the alphabet for original *r*; and we may with confidence assert that he did not devise the use of *R* for the *r* that had arisen out of *z<s*. Such things come about without anybody's deliberate interference. Most persons did not know whether the *r* they sounded was one that was always *r* and had always been written *R* or was originally an *s* that had become *r* but had formerly been written *S*. Similarly some people to-day do not know whether to write such a word as *advertise* with a *z*, as in *baptize*, or with an *s*, and it was just such uncertainty as to whether the *z* sound was original or had developed out of *s* that eventually established the spelling *prize* in place of older *prise*. So in the day of Appius Claudius some people wrote (for *r<z<s*) the traditional orthographic *s* or *S*, especially in proper names; while others wrote the phonetic *R*. And probably the most that Appius Claudius did was to favor the latter spelling in public documents, in which there is usually a tendency to keep up antiquated forms and spellings, particularly in the case of names.

But it is wonderful what all may be spun about such an anecdote as that told of Appius Claudius by Martianus

Capella. We have seen that his exact words were: *z vero idcirco Appius Claudius detestatur quod dentes mortui dum exprimitur imitatur*. To this Mommsen (*Römische Forschungen*, I. p. 304) adds: "Appius kann dies wohl nur als Grund angegeben haben (oder haben sollen) für die Verbanung des *z* aus Sprache und Schrift." And this natural inference of Mommsen's grows from book to book into the story that "Martianus Capella tells us that the letter was removed from the alphabet by Appius Claudius Caecus, the famous censor of 312 B.C., adding the curious reason that in pronouncing it the teeth assumed the appearance of the teeth of a grinning skull" (Lindsay, *The Latin Language*, p. 6). Jordan, in his *Kritische Beiträge*, p. 157, argues that it may have been this same Appius Claudius who invented the letter G, rather than the traditional Spurius Carvilius Ruga (cf. p. 24 above). And this theory is accepted by Stolz (*Historische Grammatik der lateinischen Sprache*, I. p. 84, § 71) as probable and is stated by Lindsay (*Short Historical Latin Grammar*, p. 5) as a fact; though it is really little more than guesswork.

The other evidence brought forward for such a Z is also (as has been shown by Harrington, *Proceedings of the American Philological Association*, July, 1898, p. xxxiv, and by others) pitifully meagre and uncertain. In three of the medieval texts of Varro's quotation from the *Carmen Saliare* a *z* is found in the group *cozeulodorieso* (indeed, we were formerly told there were two: *cozevlodoizeso*, Seelmann, p. 319), but, as I shall show later (see page 39), the rarer reading *coceulodorieso* is the correct one, and the more frequent *z* is only a medieval spelling for *c*, both sounded *ts*. It is thus impossible that Velius Longus (circa A.D. 100) had this passage in mind when he wrote: *michi videtur nec aliena latino sermoni fuisse (z littera), cum inveniatur in Carmine Saliari*, p. 2217, Keil, VII. p. 51. In all probability Velius Longus found in the antique text of the *Salian Hymn* an angular *s*, or perhaps a retrograde *Z*, and saw in this a Z.—Some have tried to find a Z on the Duenos bowl, but this is certainly a mistake. The letter is *J* and so has some resemblance to

the old I, but none whatever to Z. It is evident that when the text was written this letter was omitted,¹ for it is crowded in between the two adjacent letters. In spite of this, it is recognizable as a V or V, and the word is retrograde DVENOI, corresponding to the DVEÑOS in the same inscription, as explained by Bréal, Pauli, Comparetti, and Conway. That their explanation of this letter is not only a happy one but also correct beyond all question, I shall show in detail in a forthcoming article on the Duenos inscription and the etymology of certain words in it. [Here I need say only that Conway's interpretation (AJP. X. p. 455) is most nearly correct, but that *duenos* and *manom* are not names but Old-Latin forms of *bonus* and *malum*. *manom* became *malom* by dissimilation (Brugmann², I. § 976 b), and is identical with *μανός* 'thin, slight, flaccid, scanty, few,' the weak form of *μόνος* 'single'; compare the development of the meaning of English *slight*, German *schlecht*, from 'simple, slight, etc.,' to 'worthless, bad.']. The only case of a good Z is on one or two coins of the Etruscan town Cosa: COZA(NO) and (CO)ZANO, Ritschl, PLM. I. vii. 40 a; ONAZO 40 b; COSA(NO) 41 a. This Ritschl (*Opusc.* IV. 721 ft.) regards as Z, Jordan (*Kritische Beiträge*, p. 155) and others as only a form of angular z or s (cf. p. 37). In connection with this might be mentioned the Z used in the Oscan inscription in Latin letters on the Bantine Tablet, but to these two cases I shall return (p. 35 etc.).

Not only is the theory of an early Latin Z ill founded and inconsistent, but there are also other serious objections to it. In the first place it takes for granted that Greek *zeta* had in early Latin the form Z. Stoltz has the more correct form I, which, when appearing in Oscan and Umbrian, is referred to by Lindsay (*The Latin Language*, p. 6) as "the letter written in the Oscan alphabet like a capital I with top and bottom strokes prolonged, and in the Umbrian alphabet with the same strokes slanting instead of horizontal." When speaking of the early Latin *zeta*, he (*The Latin Language*, p. 5-6), like

¹ It is not improbable that this was due to the fact that the *du* had already passed into a labialized *d*, on the way to *b*, Brugmann², I. § 359.

Seelmann (*Die Aussprache des Latein*, p. 319), has only Z in mind, and on page 2 of his *Short Historical Latin Grammar*, actually gives Z not only as the early Latin, but also as the early Euboean form! On page 5 he tells us, as though a well established fact, that the genitive plural ending was originally written ΑΖΩΜ, and Cicero's words (*Sed tum Papisii dicebamini. Post hunc XIII fuerunt sella curuli ante L. Papirium Crassum, qui primum Papisius est vocari desitus.* Ep. Fam. IX. 21) reappear in Lindsay (*Short Historical Latin Grammar*, p. 5) as "L. Papirius Crassus, dictator in 339 B.C., was the first of his family to write his name ΠΑΠΙΡ instead of ΠΑΠΙΖ." Not stopping to comment on this strange substitution of Z for the S given by Cicero, Varro, etc., we know Z to be a form that arose in Greece at a comparatively late date, being not at all a true epigraphic form, but one that developed in writing and later passed from the cursive into the monumental hand. Like most cursive forms, it is due to the avoidance of raising the stylus, — observe the forms shown in Müller's *Handbuch*, I. page 304¹: I I Z Z Z. We have, therefore, no reason even to look for such a form of *zeta* in early Latin.

Secondly, the theory puts Latin at variance with the other Italic dialects, not only in the form of the letter, but also in its sound, the latter of which points is evident to Lindsay (*Latin Language*, II. § 121, p. 105). In Oscan and Umbrian *zeta* represents *ts*, while *z*, like *s*, is represented by retrograde ƧƧ (Planta, *Grammatik der Oskisch-umbrischen Dialekte*, I. § 26). As we have not a particle of evidence that the Latin intervocalic *s* that became *z* and later *r*, was ever written Z (even COZA would not be a case in point, for it was not a Latin name, and appears in Vergil as COSA, *Aen.* 10, 168, not CORA¹), and plenty of evidence that it was written ƧS or ƧƧ before it became *r* and was represented by R; we have no reason whatever for supposing that Latin *z* was ever written otherwise than ƧS or ƧƧ, or in any other way than in the remaining Italic dialects.

¹ With the Etruscan town *Cosa* must not be confounded *Cora* in Latium, one of whose coins is given by Ritschl, Pl. VII. 39, though the names of the two towns may ultimately be equivalent.

II.

Turning now to the origin of G, we have seen that Terentius Scaurus (*pro ea [C littera] nota adiecta a Spurio Carvilio novam formam G litterae positam*, De Orthographia, Keil VII. p. 15) and Plutarch (*καὶ γὰρ τὸ κ πρὸς τὸ γ συγγένειαν ἔχει παρ' αὐτοῖς· ὀψὲ γὰρ ἐχρήσαντο τῷ γάμμα Καρβειλίου Σπορίου προσεξενρόντος . . . ὀψὲ δὲ ἥρξαντο μισθοῦ διδάσκειν, καὶ πρῶτος ἀνέφενε γραμματοδιδάσκαλείον Σπόριος Καρβίλιος, ἀπελεύθερος Καρβίλιον . . . Quaest. Rom. 54, 59*) ascribe its invention to Spurius Carvilius Ruga (circa 231 B.C.). Mommsen has, however, shown (*Unteritalische Dialekte*, p. 32) that this cannot be correct, inasmuch as the letter was in use before the time of Carvilius. Corssen (*Über Aussprache*, etc., first edition, p. 7) is doubtless right in supposing that Carvilius did not invent the letter, but taught and advocated the use of C for *k* and G for *g*. His own name (*Carvilius Ruga*) would tempt him to observe the distinction. We were formerly told that G was made out of C by the addition of a horizontal bar; later, that G was really earlier than G, and that the diacritic consisted in a perpendicular stroke or beard; and now our attention is called to the fact that even G is not the earliest form of the letter, but that an older form was G, according to which the diacritic consisted in an upward stroke. It is evident that those who have assured us of the contrivance of G out of C really possessed very little positive knowledge on the subject, and that it is incumbent on us to learn more about the early forms of G and about the forms assumed in Italy by the Greek *zeta* before we venture to draw conclusions.

Somewhere about the seventh century B.C. the Greek alphabet, in its Western form, was brought to Italy by Greek colonists, and soon after was introduced among the native Italic tribes. In this alphabet *zeta* had the old Greek forms I‡, etc., but a modification of this letter appears to have arisen among the Greeks in Italy. This modification consisted in the shrinkage and ultimate disappearance of the crossbars on one side of the shaft. As this modification

is found in all the Italic dialects except the Oscan,¹ it was probably common among the Greeks from whom the Italians got the alphabet; but this is hard to verify, as the letter is rare in inscriptions. The Ι of the Caere alphabet shows a decided shrinkage of the bars at the left² (*IGA.* No. 534, Roberts, *An Introduction to Greek Epigraphy*, p. 17; Kirchhoff's reproduction, *Studien zur Geschichte des griechischen Alphabets*, fourth edition, p. 135, is quite wrong). In the Italic dialects *zeta*³ appears (turned to the right) as:—

Oscan	I
Campano-Etruscan :	I I ± λ
Etruscan	≠
Faliscan	# ↗ ↗ ↗ ↗
Umbrian	‡ ‡ ↗ ⁴
East Italic (Sabellic)	I !

It is therefore incumbent upon us to look for some such letter in early inscriptions employing the Latin alphabet. This we find on the Rapino bronze in the forms ζ_{10} , ζ_3 , ζ_7 , ζ_8 (Zvetaieff, *IIMD.* II. 2. In his *Italic Dialects* Conway generalizes or levels the forms under the character ζ , table, ζ p. 254). In line 10 it has exactly the form that we should expect the old *zeta* to have assumed in Latin, if it did not remain I as in Oscan. In the other cases the character tips more or less, just as the upright *gamma* Γ became ζ in the Western Greek alphabets. Now, it is remarkable that in all these cases this character has the value of *g*. That is, not

¹ The development in Oscan may have been checked by the fact that retrograde F there had the form ʃ, etc. In Umbrian the two were differentiated by the direction of the bars: ʃ = F, ʒ = I.

² The *zeta* reported with uncertainty as | in the Colle alphabet (*IGA* No. 535, Roberts, p. 18), the alphabet of Cepello (*IGA* No. 546, Roberts, No. 268), and even in an alphabet from Amorgos (*IGA* No. 390 b, Roberts, No. 159 b) may be misread for such a *zeta*, or rather represent the absolute shrinkage of the strokes, thus avoiding the C = F. Compare the East Italic I for I and i for T. In the Phrygian alphabet (*Journal of Hellenic Studies*, III. p. 1, IX. p. 380) one stroke shrinks on one side and the other on the other, thus 1.

⁸ The Greek Τ shows similar forms: Campano-Etruscan Τ, Faliscan γ, Umbrian γ.

⁴ Conway is wrong in giving $\mathbb{F} \setminus \mathbb{Y}$, cf. the facsimiles in Zvetaieff and Bréal.

only is the oldest form of G thus far discovered identical with the characteristic Italian form of *zeta*, but it thus appears that the letters are one and the same and that this character from the beginning to the end maintained its place as the seventh letter of the alphabet. The development of form is exactly parallel with that of *gamma*, simply somewhat slower in the early stage:—

Γ ῥ < < C C
I I Λ < G G

But one naturally asks: How did it come about that the letter *zeta* should stand for the sound *g*? The Greek dialect that gave the Italic peoples their alphabets still had I as the sign for the sounds *dz* (Planta, *Gram. der O-U. Dialekte*, I. p. 73). The Oscans and Umbrians took the letter for their nearest correspondent, namely *ts*, and we may ask why the Latins did not do the same. The answer is very simple. Original *ts* became *ss* in primitive Italic, *ss* and *s* in Latin (Brugmann², I. § 753; Planta, *Gram. der O-U. Dialekte*, I. § 190). Later, new *ts*'s arose: (1) by syncope, particularly in Oscan and Umbrian, for example, Oscan *húrz*, that is, *húrts* = Latin *hortus* (Planta, § 109, etc., § 190); when *ts* arose in Latin in this way, it passed on to *s(s)*, as original *ts* had done, for example, **parti-s* > **parts* > *pars* (Brugmann², I, § 763c; § 753); (2) by the change of *ns* into *nts*¹ in Oscan and Umbrian, but *not* in Latin (Brugmann², I. § 415). There thus was a *ts* in Oscan and Umbrian to be represented by *zeta*, but none in Latin. The character Λ was, therefore, in Latin an idle letter. In shape it resembled one form of *kappa*, as *gamma* (<) resembled another. In order to make this clear, we must call to mind the early Italic forms of these letters:—

gamma	. . . . .	<	c
kappa	. . . . .	κ | κ	Κ Λ
zeta	. . . . .	I Ι	‡ Λ

¹ As, for example, 'since,' that is, *sins* has become *sints* in the English of the northern central States. Cf. also Whitney's *Sanskrit Grammar*, § 207, where, however, the process is incorrectly explained.

² For such forms of Κ see *IGA*. Nos. 155, 341, 484, etc., the Duenos bowl, the

That *c* and *k* became confused, we all know; that the forms of *zeta* should also become confused with those of *kappa* was but natural. Indeed, it is more than likely that the form £ , which is usually classed as a *kappa* and regarded as a corruption of K , is really a *zeta*, the further development of ‡ , cf. the Etruscan § . Similarly, the 匚 found in the Duenos inscription and elsewhere is more likely a development of such a *zeta* as is seen in the 匚 of the Caere alphabet (page 30), than a perversion of *k*. It might be said, and has been, that *gamma* and *kappa* became confused because of the similarity of their sounds. And there has been a great deal of talk to the effect that the distinction between Greek κ and γ was greater than that between Latin *c* and *g* (Corssen¹, p. 5, 16; Seelmann, p. 344; Stoltz in Müller's *Handbuch*, II. p. 250); though the idea is not at all supported by the history of the language, and would probably never have been suggested but for the confusion observed in the letters. In the same way the confusion of *s* and *k* and of 匚 and 匱 (see page 33) whereby Etruscan lost the means of distinguishing *g* from *k* and *d* from *t* and by analogy subsequently ceased to distinguish *b* and *p* in writing, has led to the inference that in Etruscan the voiced stops became voiceless (cf., for example, Conway, *Italic Dialects*, p. 464). That this confusion¹ was not due to the similarity of the sounds is shown by the

archaic inscription given by Egbert, *Introduction to the Study of Latin Inscriptions*, p. 274, the inscription just found in the Forum (*Stele*, etc. Estratto dalle *Notizie degli Scavi* del mese di maggio, 1899; *Berliner Philologische Wochenschrift*, Aug. 5, 1899), and, best of all, Plate K, *Annali dell' Inst.* 1876.

¹ The history of the Runes presents a similar case. As Greek Ξ was simplified to 匚 and 匱 in Greek, Latin, Runic, etc., so Greek Σ 匱 were simplified to 匚 , $*\text{匚}$, and $*\text{匱}$, the last by such inversion as changed Greek V to Runic A . These forms of *e* came in conflict with those of *p*, namely, 匚 and, by inversion, $*\text{匱}$. After a period of more or less confusion, a differentiation set in, which gave to *e* the form 匚 M in the whole Germanic territory, and to *p* (1) the form $*\text{匱}$ W on the Continent, (2) $*\text{匚}$ or K in England, and (3) B in Scandinavia. That is, in the North-Germanic countries the letter for *e* drove the similar letter for *p* entirely out of use, so that *p* and *b* were represented by the same letter. In time the graphic distinction of *t*, *d*, *kg*, was also given up. Still, there was in the language no corresponding confusion of the voiced and voiceless stops; in fact, they were later again distinguished in writing.

fact that Etruscan transmitted λg and λk correctly to Oscan and Bb and $\sqcap p$ to both Oscan and Umbrian,¹ and that there was in Latin no confusion of *d* with *t* or of *b* with *p*; but particularly by the fact that confusion of *gamma* and *kappa* is characteristic of the Western Greek alphabets, in which *gamma*, by becoming ζ , approached κ in form. Thus ζ was confused with κ in Etruscan, Umbrian, Faliscan, and Runic (page 34), as well as in Latin; in all cases, except in Umbrian, to the disadvantage of κ . But no such confusion took place in those Greek alphabets that retained the form Γ for *gamma*. It was, therefore, formal rather than phonological similarity that led to the confusion of *gamma* and *kappa*, and it was similar formal likeness that caused the confounding of *kappa* and *zeta*. There was thus a period of more or less confusion during which the sounds *g* and *k* were represented by ζ or κ , κ or ζ , and \sqcap or \sqcup (cf., for example, —

□ M I S A I P C O □ A Δ Ζ² A □ Ζ Ε Ζ Ε

¹ From this it is clear that the confusion of $\square d$ and φr in Etruscan preceded the confusion of λg and λk , and that both preceded the loss of B in Etruscan. The various stages of Etruscan and the relation of each to Oscan and Umbrian may be seen from the following: —

(1) $\varphi r, \square d Tt; \lambda g \lambda k; Bb \sqcap p$.

A confusion of φ and \square arises (cf. page 32): —

(2) φr and *d*, $\square d$ and *r*, Tt ; $\lambda g \lambda k$; $Bb \sqcap p$.

The alphabet passes to the Oscans, among whom the byform \mathbb{R} prevails and the signs for *r* and *d* are differentiated, whereby we get the usual Oscan: $\square r, \mathbb{R} d Tt; \lambda g \lambda k; Bb \sqcap p$. In Etruscan λ and λ too become confused: —

(3) φr and *d*, $\square d$ and *r*, Tt ; λg and *k*, λg and *k*; $Bb \sqcap p$.

The alphabet passes to the Umbrians, who differentiate the letters for *r* and *d* as the Oscans did and let λ drive out λ , whereby we get (*a*) primitive Umbrian: $\square r, \varphi d Tt; \lambda g$ and *k*; $Bb \sqcap p$. Intervocalic Umbrian *d* becomes \check{r} and, taking the symbol φ , leaves other *d*'s to be represented by T . Thus we get (*b*) the Umbrian alphabet as we know it: $\square r \varphi \check{r}; Td$ and *t*; λg and *k*; $Bb \sqcap p$. In Etruscan, on the other hand, λ drives out λ , and \square drives out φ , and then scribes give up the anomaly of distinguishing the labial stops *b* and *p* in writing, and we get the last stage of Etruscan: —

(4) $\square r; Td$ and *t*; λg and *k*; λb and *p*.

² This is a \circ changed to a \square , not the reverse, as stated by Egbert (p. 27), Conway (p. 331), and others.

on the Duenos bowl; the $\zeta = c$ in Praenestine, Conway, No. 297; and *aciptvm convivia hvc gondecorant volgani gonlegivm aged(ae)* Garrucci, *Syll.* No. 557, as quoted by Seelmann, p. 344; I have no access to Garrucci). And, for that matter, *koppa* sometimes entered the competition (cf. $\mathbb{F} \mathbb{Y} \mathbb{F}$, etc., that is, *ego K = ego Kaiso*, Egbert, p. 274, and Seelmann, p. 344, etc.). In the course of time there developed out of the chaos more or less order. Thus the complicated characters κ and φ or Q became restricted to special and limited use (to which φ had a tendency from the start) and the letters ζC and ζG , which could easily be scratched without raising the stylus, were most generally employed and became differentiated into $\zeta C = k$ and $\zeta G = g$.

The corresponding process in the Runic alphabet is so similar that it must not be passed without a word. In this originally Western Greek alphabet (see *Journal of Germanic Philology*, II. p. 370), $\zeta \kappa X$ passed through a period of confusion (corresponding to that of $\zeta k \zeta$ in Latin), which resulted in the loss of κ and the shifting of ζ to k as in Latin, whereby X got the value of g , as ζ did in Latin.—In a similar way, as we have seen (page 33, ft.), the likeness of form in ζd and φ (later \mathfrak{R}) r led to their confusion in Etruscan, and thus in Oscan and Umbrian. In Oscan a differentiation set in whereby the values of the two letters were just reversed. In Etruscan and Umbrian both the letters became lost to d , which was therefore expressed by the sign for the corresponding voiceless stop t . In Umbrian there developed out of ζ and φ the byform \mathfrak{d} or d , and the three were ultimately differentiated for the three similar sounds r , \mathfrak{r} , \mathfrak{s} .—The three-stroke letter for n , M or N , was similar to the four-stroke M_s , and therefore sometimes confounded with it. So we find N as the spelling for both n and s in a Tarentine inscription (Roberts, No. 268), and in the Caere alphabet and inscription we find that, after such a period of confusion, a differentiation set in, whereby the values of the two letters were reversed, that is, M is s and N is n (see *IGA*. No. 534 and Roberts, p. 17). We must remember that after a period of confusion, nobody knows that one of the sounds had an original claim on one

of the letters, and thus a new differentiation may result in the absolute exchange of values.

[While reading the proofs of this paper, it occurred to me to look up the treatment of *gamma* and *kappa* in the Celtiberian alphabet. As *gamma* there had the form <, I was not surprised to find that it had been confused with *kappa* and, as in Latin, had become one of the signs for the sound *k*. But I was not prepared to find that, exactly as in Latin, *zayin* or *zeta* (in the form ɻ Z etc.) had assumed the old value of *gamma*, namely *g*, and that it had even adopted the name *guimel* = *gamma*. It is evident that the old ɻ ɻ assumed in Celtiberian the forms: (1) ɻ ɻ (cf. the Italian forms); (2) ɻ ɻ ; (3) ɻ ɻ etc. (cf. the Phrygian form, p. 30 ft. 2). The first type brought it into conflict with opened ɻ, that is ɻ, and the second with <, which in turn was confounded with ɻ. In this way, all these forms became signs of *k* and *g*; but by a later differentiation ɻ ɻ Z etc. were restricted to the representation of the sound *g*, the others continuing to represent *k*. Cf. Berger, *Histoire de l'écriture*², p. 336.]

There was, thus, no loss of old *zeta* and no invention of *G*. And now that we look back upon it, we cannot but wonder that we never found it strange that a new letter should not have been placed at the end of the alphabet, as *Y* and *Z* were, or next to the letter out of which it was supposed to be evolved, as *J* and *U* were in modern times — but that a good snug place was reserved for it all those centuries in the middle of the alphabet by the accommodating old *zeta*.

III.

It remains for me to say a few words as to the *Z* found in the Oscan text written in Roman characters on the Bantine Tablet, as well as the *Z* used in Latin in the spelling of Greek names (page 27, above). We have seen that this *Z* cannot possibly go back to an early Latin *zeta*. It is generally assumed that the use of *Z* in writing Greek names (a practice that began in the time of Augustus) was derived directly from the Greek of that time, and Mommsen (*Unteritalische Dialekte*

p. 33) brings the use of Z on the Bantine Tablet into connection with this, to which Planta (I. p. 72, ft.) rightly objects that the text is too old for that, Mommsen himself placing it between 129 and 118 B.C., and others still earlier. But there are other reasons for supposing that this Z was not derived directly from Greece. At first the Romans represented both Greek *s* and Greek *z* by S or S̄, just as we found that the Italians generally represented *s* and *z* by S or S̄. When they later used Z in writing Greek names, it was not to transliterate the Greek letter Z, but to distinguish the sound *z* (whether written in Greek with a Z or a Σ) from the sound *s*: ZMVRNAE, CIL. VI. 3, No. 16030, etc. (for collections of such cases see Seelmann, p. 315, and Stolz, I., p. 85, § 73-74). This spelling surely does not reflect a Greek text; in ZMVRNAE we have not only Z for Greek Σ, but also the Latin spelling V rather than the Greek Y. If the Romans used the letter Z in this way, it is clear that it was to them the sign for the sound *z* and not simply a transliteration of the Greek letter Z. The use is identical with that in the Oscan text written in Roman letters on the Bantine Tablet. While this cannot be derived from the Greek, neither can it be derived from the Oscan *zeta*; for the Oscan *zeta* was I not Z, and spelled the sounds *ts* not *z*, and the Oscans used retrograde S̄, that is Σ and Z for both *s* and *z*. Nor can the usage have arisen in Latin, for Latin no longer had a *z*, this sound having passed into r. Let us examine the matter more closely. The Italic dialects represented both *s* and *z* by SS̄ or ZZ̄. We saw that this was also true of early Latin and of the Latin treatment of Greek words up to the time of Augustus. Now, it would not have been strange, even without the special reasons that I shall state directly, had the diversity of the symbols (SS̄ZZ̄) used to represent the two sounds *s* and *z* tempted writers here and there to differentiate and, while retaining S or S̄ for *s*, to use Σ or Ζ for *z*. In exactly this way we find C used for k and O for g in Praeneustine (Conway, I. § 281, p. 313). That the rustic Ζ should become the monumental Z is just what was to be expected (compare the change of EΛΜ into ELN). In fact, there

already was a distinct approach to the form Z, especially in Oscan. Compare the $\mathcal{Z}\mathcal{Z}Z$ on Zvetaieff's Plate V. No. 1, and the \mathcal{Z} in No. 5. On Plate II. the letter is in many cases more like Z than like \mathfrak{z} , especially in B, line 23. Compare also the Z-like forms in XIX., particularly line 19, end, 22, 23. The Faliscan letter in his No. 345 Conway says "is rather square (Z)." We have also seen that on the coins of the Etruscan town Cosa the letter looks so much like Z that some authorities regard it as such, while others think it a retrograde \mathfrak{s} (page 27, above). Both are right in a sense: the letter is in form Z (and so accidentally identical with Greek Ζ), but it is by development only a differentiated form of $\mathfrak{z}\mathfrak{s}\mathfrak{s}\mathfrak{S}$ (cf. below).

But where can this differentiation have arisen? We saw that it did not arise in the native non-Latin alphabets and that it could not have arisen in Latin, where there was no \mathfrak{z} to be represented. The differentiation doubtless arose just where we first find it, namely, in one or more of the Italic dialects that had the sounds s and z but used the Roman alphabet. These conditions specially favored the differentiation Ss Zz. The Umbrians recognized in Latin rounded S their own rounded \mathfrak{z} , and, as they used the latter for both s and z , so they used S for both sounds when they employed the Latin alphabet. The Oscans could, and to some extent did, do the same. But when the Oscans began to use the Latin alphabet, the established Oscan forms were \mathfrak{z} and Z, and the established Latin form was S. To the Oscans, S was not simply a reversed Z, but a new letter. They learned it in Latin as the symbol for the sound s , and for that only (as the sound z did not exist in Latin at the time); but their native Z was to them the sign of both z and s . What, then, was more natural than that they should, when writing Oscan with Latin letters, be tempted to use Latin S for the sound s , as it was used in Latin, but to employ the native Z to represent the native z -sound, for which the Latin alphabet offered no symbol? So too in COZA(NO) and ONAZOO we find the native Z employed, regardless of the direction of the writing; while in COSA(NO) there is a complete yielding to the Latin, in form and direction.

A similar problem arose in writing Umbrian with the Latin alphabet, which had no sign for the Umbrian fricative usually spelled *d*. In the Iguvine Tables (Conway, p. 399, etc.) an *S*, usually with a diacritic, thus *ſ*, takes the place of the native sign. But in the Picene inscriptions in the Latin alphabet (Conway, p. 449) the sound is represented by *q*, a form differing from the usual *d* (see page 34) fully as much as the *Z* of the Bantine Tablet differs from the usual Oscan *ȝ*. Parallel with this introduction of native *ȝ* or *Z* and *d* or *q* into the Latin alphabet is the introduction of the native *digamma* *Ϛ* into the Ionic alphabet when the latter was adopted by the Greeks of Tarentum (Conway, p. 461).

To judge from the age of the Bantine Tablet, we may estimate the rise of the differentiation *Ss Zz* at about 140 B.C., that is, fully a hundred years before the Romans ceased to write Greek names with *S* for Greek *Z*. That this use of the Latin alphabet in spelling Italic dialects should, in the course of time, extend to the spelling of Greek names in Latin was but natural, especially when the form of the letter used to represent the sound *z* chanced to coincide with that most frequently employed to represent *z* in Greek. Nor should it surprise us that Latin scholars came to look upon this *Z* as the Greek *zeta* and, on the model of it, introduced also Greek *Y*. Thus the older *ZMVRNA* was displaced by *ZMYRNA* (*CIL. VI.* 3989–90) with, however, the interesting retention of the Italian *Z*.

To recapitulate:—

(1) As Latin did not possess the affricate *dz* or *ts*, the Greek *zeta* was an idle letter in the Latin alphabet. As *gamma*, in the Western form *ȝ*, became confounded with *kappa*, so too did *zeta*, in the Italian form *ȝ ȝ ȝ*. After a period of confusion, a differentiation took place, whereby the use of *kappa* was much restricted, *ȝ* or *C* became the sign for the *k*-sound, and *ȝ ȝ* or *G* the sign for *g*.

(2) The letter *Z* appears in Italy first in the writing of Italic dialects in the Latin alphabet. It is a natural development of the native *ȝ* and was used to represent the native *z*-sound, while Latin *S* was employed, as in Latin, for the

s-sound only. Later the use of Z extended to the spelling of the z-sound in Greek names in Latin, whether spelled Z or Σ in Greek.

IV. APPENDIX.

THE COCEULOD ORIESO OF THE SALIAN HYMN.

Among the many puzzles presented by the fragments of the Salian Hymns none seems to have tempted so many and baffled so many as the group of letters usually given as *coceulodorieso*. The chief solutions offered (mostly taken from Maurenbrecher, *Carminum Saliarium Reliquiae*) are as follows :—

<i>Ozeul adosiose</i>	.	.	.	.	.	.	Bergk.
<i>O Zeul adoriesis</i>	.	.	.	.	.	.	Jordan.
<i>Cozevi adorise</i>	.	.	.	.	.	.	Havet.
<i>Ozeul, o domine es</i>	.	.	.	.	.	.	Bährens.
<i>O Zaul adorise</i>	.	.	.	.	.	.	Zander.
<i>O Zol adoriso</i>	.	.	.	.	.	.	Maurenbrecher.
<i>Co(n)zeuio hordesio</i>	.	.	.	.	.	.	Birt.

These attempts are certainly anything but satisfactory : they all contain in themselves their own condemnation. In fact, we cannot but imagine the god Zeul-Zaul-Zol, who has thus been conjured up, as enjoying the joke as much as any of us.

Spengel gives the evidence of the manuscripts as follows, ignoring spacing :—

<i>coceulodorieso</i>	.	.	.	.	.	.	p.
<i>cogeulodorieso</i>	.	.	.	.	.	.	v.
<i>cozeulodorieso</i>	.	.	.	.	.	.	F, a, M.
<i>coreulodorieso</i>	.	.	.	.	.	.	G, H.
<i>corculodorie</i>	.	.	.	.	.	.	b.
<i>cosaulidolosieso</i>	.	.	.	.	.	.	B, vulg.
<i>orculedolosieso</i>	.	.	.	.	.	.
<i>(pro osculo dolori ero)</i>	.	.	.	.	.	.	Laetus.

We need concern ourselves with the first five readings only.¹ And here it is clear that the only real diversity lies in the

¹ The reading of Laetus is evidently based on *b* and *B*, or their kin.

third letter. The problem might have been approached from this point, but I shall present the matter in the way I actually proceeded, and shall return to this phase of it later.

It is apparent that the group *cozeulodorieso*, to take the usual reading, is made up of more than one word. Most scholars, misled by the aural suggestion of *adōro*, have put the *d* with the following letters. Considering the fruitlessness of the attempt, it occurred to me that the *d* might belong to the preceding *o* and be the ending of an ablative, and so I divided the group into *cozeulod orieso*. Now, if *od* is the ablative ending, *zeul* must be the stem; but if *zeul* is the stem, the only likely explanation of *co* is that it is a reduplicated syllable, for the attempt to make of it the prefix *co(n)* has proved unsuccessful. But, if it is a reduplicated syllable, we must look for the identity of *c* and *z*, and one of the two must be wrong. As *z* in early Latin would be an anomaly (see page 24 etc.), I decided for *c* and concluded that we should read with the Basel manuscript *coceulod orieso*.

It then appeared that the whole difficulty was solved; for *coceulōd orieso* is perfect early Latin and corresponds exactly to classical *cucūlō oriēre*. The subject of the development of weak *o* before the stress has not yet, so far as I know, been cleared up (Brugmann², I. § 243, 3, and middle of p. 974), but, on the analogy of weak *o > u* after the stress (Brugmann², I. § 244, 2), we should expect it to become *u*. With *coceulōd* compare also *κόκκυν* 'the cry of the cuckoo' and *κόκκυξ κόκκυγος* 'a cuckoo.' The change of *eu* to *ū* is normal (Brugmann², I. § 218). The loss of *d* (Stolz, p. 343, § 363) and the change of *s > z > r* in *orīeso > oriēre* (Stolz, p. 276, § 274) are well-known matters; in fact, it was the latter point that Varro was illustrating by the quotation. But the form *orīeso* brings us very welcome information. It has been customary to identify Latin *-re* with original *-so*, whereby Latin *sequere < *sequeso* would be identical with Greek *ἔπου < ἔπεο < *ἔπεσο* (Brugmann¹, I. § 81; II. § 1047, 2; Henry, *Comparative Grammar of Greek and Latin*, § 34, Aδ, 260, 2, § 267; Stolz, *Historische Grammatik der lateinischen Sprache*, p. 119-120, 352, 11; Lindsay, *Latin Language*,

p. 533). But certain writers have argued against this, and Brugmann, II¹. p. 1393, footnote, and I². § 245, 2 A2, suggests that Latin *-re* may go back to a *-se* that may be supposed to have existed by the side of *-so*. Now, the early Latin form *orieso* settles the question in favor of the older and still generally accepted theory of the identity of the Greek and Latin endings.

We may now return to the question of the text and explain its diversities as handed down to us. We saw that the original *c* and the voiced *g* are each found once, and *z* and *r* each three times. The change of *c* to *g* need not surprise us; it may be due to the dissimilation of *c-c* to *c-g*, or to the confusion of the stops *c* and *g* in the dialect of the writer—the manuscript is at Vienna. The displacement of *c* by *z* is very natural, inasmuch as most scribes would pronounce *c* before *e* as the dental affricate *ts*, for which *c* and *z* were equivalent medieval spellings. The substitution of *r* for *c* is due simply to the great likeness of the forms of the two letters in the eleventh century and for some time after; cf. Wattenbach, who, speaking of the form of the letter *c* (*Anleitung zur lateinischen Palaeographie*, p. 46), says: “In Min[uskel] ist schon Karol[ingisch] *c* gewöhnlich; im XII. [Jahrhundert] wird es oft durch einen Ansatz vorn dem *r* ähnlich, so * * * *r*.” Compare also the modern German written hooked *c*.

We thus find that that “mysterious jumble of letters,” as Lindsay calls it, is, as handed down in the Basel manuscript, a perfect preservation of two early Latin words, and that the slightly variant spellings of the other manuscripts are explained without difficulty.